1015.0 - Information Paper: Transforming Statistics for the Future, Feb 2016

Latest ISSUE Released at 11:30 AM (CANBERRA TIME) 02/02/2016 First Issue

Summary

Preface

PREFACE

The Australian Bureau of Statistics (ABS) has a long history of providing trusted official statistics to inform decisions on matters of importance to Australia. However, with an accelerating pace of change, the context in which we operate and expectations of the organisation are being redrawn.

Over the next five years, the ABS is implementing a wide reaching transformation program. Australian Government investment of $257 million to modernise our infrastructure provides the foundation for the ABS to transform for the future.

The transformation will enable us to exploit new opportunities and better meet the needs of users, with enhanced capability to extract greater value from all available data.

Transformation is key to achieving our vision of **unleashing the power of statistics for a better Australia**. The ABS transformation agenda is articulated in the ABS Corporate Plan 2015-2019.

This Information Paper is the first of a series of papers that will be progressively released throughout the five year transformation journey, highlighting areas of focus for the transformation; articulating the benefits for users of statistics; and outlining opportunities for input through consultation.

We are excited about our transformation, what this will mean for data providers and users of statistics, and we are looking forward to engaging with our stakeholders to ensure a successful transformation.

David W. Kalisch

Australian Statistician

February 2016

Transforming statistics for the future

TRANSFORMING STATISTICS FOR THE FUTURE

For over 100 years, the ABS has contributed to Australia's economic prosperity, to Australia's democracy and to the wellbeing of Australians by providing high quality statistical information to governments, researchers and the community. However, the ABS operates in a rapidly evolving information environment. Our statistics must keep pace with Australia's changing economic and

social environment to meet the growing expectations of decision makers, and we must deliver the best possible statistical program in more efficient and innovative ways.

The cost to the ABS of traditional survey collection methods has been increasing over time and we are implementing ways of acquiring information which are less intrusive and less costly on households and businesses. Tapping into the potential of existing data sources such as administrative and transactional data held by governments and businesses, as well as drawing on sophisticated statistical modelling and estimation capabilities, provide opportunities to meet increasing demands to deliver more and enhanced statistics, in a challenging fiscal environment.

Through transformation, the ABS will deliver trusted, high quality statistics that are richer; draw on multiple sources; more coherent; more accessible; and use new methods to inform on matters of importance to Australia.

Enhancing our statistical capability involves major re-design of our statistical collections, methodologies, products and services in order to deliver a more sustainable statistical program that extracts greater value from all available data, to produce modern statistical solutions.

To ensure the best alignment of our statistical program with Australia's information requirements, we will engage with stakeholders to better understand their information needs and how information best supports their business. This will enable us to effectively identify potential data sources and the methods that could underpin fit-for-purpose statistical solutions. We will collaborate with experts on key methodological and technical elements, and with data custodians to maximise the value of existing data sources.

We are committed to improving the value of data for policy development and evaluation - by bringing data sets together across the commonwealth, to address complex matters of importance to Australia, and improving access to our data whilst respecting the confidentiality and privacy expectations of our citizens and data providers. For example, we recently provided direct access to microdata for two of the Productivity Commission's officers working on the Migrant Intake into Australia Inquiry. This access was provided through an in-posting arrangement within an ABS office, and gave them the ability to perform complex analysis of ABS microdata when needed, as the inquiry progressed. This approach also provided the Productivity Commission with the capacity to apply statistical modelling techniques to unit record data, rather than simply evaluating aggregate data.

We also recently enhanced access to the Australian Census Longitudinal Dataset – which brings together a 5% sample from the 2006 Census with records from the 2011 Census - by making it available in a secure environment to approved researchers through the ABS Data Laboratory. This dataset is enabling rich research and spurring additional policy discussion, for example, in relation to the propensity of Australians to identify as being of Aboriginal and Torres Strait Islander origin over time and their changing socioeconomic circumstances.

The 2015 ABS Engagement Strategy reflects the importance of the principles of understanding, collaborating and nurturing within our engagement. This framework will provide the basis for engagement and consultation around the ABS' transformation journey.

During transformation, we will carefully manage statistical risk and impacts on statistical outputs. Effective management of risk during our transformation is imperative to ensure continued delivery of high quality, official statistics. The ABS Risk Management Framework aligns with the Commonwealth Risk Management Policy and has been a significant focus for the ABS in 2015-16.

Benefits of transformation

BENEFITS OF TRANSFORMATION

By maximising the use of multiple data sources, statistical methods and flexible access to data, we

aim to:

- produce higher value statistics (i.e. timely, relevant, accurate, coherent, interpretable and accessible) that meet current and emerging policy and research requirements
- provide new and enhanced options for creating responsive and cost effective statistical solutions (data integration, modelling, increase use of administrative and transactional data)
- achieve better measurement of outcomes for industry and population groups of interest, including key life cycle transitions and pathways.

By enhancing our survey program, we aim to:

- meet increasing information requirements at lower cost
- provide greater opportunity for linkage between Census data, business and household survey data and administrative datasets, to enrich the range of variables, enable longitudinal analysis, and enable modelling of data for small areas and populations
- provide more frequent statistics or regional estimates for population groups or industries
- achieve better measurement of outcomes for regional Australia, including the diversity and sustainability of regional economies
- improve collection methods to reduce respondent burden (e.g. internet, machine to machine, report once to government)
- utilise alternative data sources (e.g. administrative, transactional, earth observations) to replace direct collection methods where possible, while ensuring the continued quality of our statistics.

By reprioritising our statistical program to meet Australia's emerging information requirements, we aim to:

- increase stakeholder engagement in ABS priority setting to ensure visible and continued close alignment of the ABS work program, products and services with stakeholder priority needs
- work with stakeholders to identify and acquire data sources.

The ABS will continue to work closely with our partners and stakeholders to understand their information requirements and develop appropriate statistical solutions to meet these needs.

The next phase in transforming statistics

THE NEXT PHASE IN TRANSFORMING STATISTICS

A transformation of this scale presents considerable challenges and this is just the start of the journey. We will continue to have our ambidextrous ability tested as we deliver high quality and timely official statistics, while innovating to take advantage of new information opportunities, strengthening our partnerships, and driving high performance.

There is more work to be done in undertaking one of the biggest changes in the ABS' history and with the ongoing support of our stakeholders, we are confident we can achieve our vision of **unleashing the power of statistics for a better Australia**.

This Information Paper is the first of a series of papers that will be progressively released throughout the transformation journey. There will be opportunities to influence the direction of our transforming statistics program, as well as to keep up to date on our progress, in the following ways:

- we will have an ongoing focus on transformation and its benefits through our regular engagement with stakeholders
- we will regularly release updates on our transformation progress - by way of further information papers and discussion papers - throughout 2016
- we are very interested in receiving any comments, questions or suggestions around the transformation, through our dedicated transformation email address: transforming.statistics@abs.gov.au.

We are excited about our transformation, what this will mean for data providers and users of statistics, and we are looking forward to engaging extensively with our key stakeholders to ensure a successful transformation.

Data integration initiatives

DATA INTEGRATION INITIATIVES

Better utilisation and integration of existing datasets will be a key focus during the ABS transformation. By combining information from existing surveys, administrative collections and censuses, a more complete picture of the circumstances of individuals, households and businesses can be seen. Integrated datasets also have the flexibility to be combined with additional point in time, and/or longitudinal information, and provide an opportunity to better assess the effectiveness of policies and programs.

Statistical data integration developments rely on partnering with the government, research and private sector. The ABS is building capability through new and existing partnerships with data custodians to improve accessibility to public information and maximising its use for statistical purposes.

A key example of these partnerships is the Multi-Agency Data Integration Project (MADIP). The partner agencies for the MADIP are:

- Department of Social Services
- Department of Health
- Department of Human Services
- Australian Taxation Office
- Australian Bureau of Statistics

The purpose of the MADIP is to create an enduring, linked, publically accessible research dataset, which is on hand to help government agencies and researchers respond to nationally important policy and service delivery questions.

Through contributing to Australian Public Service wide initiatives, the ABS recognises that this is the

starting place for supporting the increased availability of data and developing greater capacity to create 'on demand' integrated datasets. The ABS also recognises the importance and opportunity to link data from other levels of government and the private sector to fully capture efforts in key areas such as health, education and infrastructure.

Improving our ability to link, combine and repurpose data will offer users of statistics the following benefits:

- **increased options** - for responsive and cost effective additional solutions (utilising data integration, modelling, increase use of administrative and transactional data)
- **improved measurement** - in particular, of outcomes for population groups of interest, including key life cycle transitions and pathways
- **maximising new approaches** - to sourcing and creating datasets
- **richer statistics** - by integrating components of datasets with a wide range of non-ABS data held by governments and organisations.

Some notable data integration achievements include:

Area of Interest	Key Partner(s)	Linked Data	Benefits
Mental health circumstances	• National Mental Health Commission • Department of Health • Department of Human Services	• Medicare Benefits Schedule • Pharmaceutical Benefits Scheme • Census of Population and Housing	Enabled new analysis regarding the effectiveness and efficiency of mental health services in Australia.
Educational outcomes over time	• Department of Education and Training • Australian Curriculum, Assessment and Reporting Authority • Queensland and Tasmanian education departments	• Australian Early Development Census • National Assessment Program – Literacy and Numeracy • Census of Population and Housing	Enabled analysis of the impact of personal, family, social and economic characteristics on school achievement and child development over time (for Queensland and Tasmania).
Longitudinal business analysis	• Department of Industry, Innovation and Science	• Administrative data • Directly collected firm level data	Provided new information about business innovation, efficiency performance and likelihood of business survival. In conjunction with the Department of Industry and Science, the ABS has developed the Expanded Analytical Business Longitudinal Database, which links financial and characteristics data for all active businesses in the Australian economy from 2001-02 to 2012-13.
Migrants' outcomes	• Department of Social Services • Australian Taxation Office • Department of Immigration and Border Protection	• Settlement database • Taxation data	Provided a comprehensive picture of the economic outcomes of migrants to assist policy makers and researchers to better understand the experience of migrants and their contribution to Australia.

Case Study

Migrant Personal Income Tax Data Integration

To improve the relevance and quality of migration statistics, the ABS worked in partnership with the Department of Immigration and Border Protection, the Australian Taxation Office and the Department of Social Services to create the Personal Income Tax and Migrants Integrated Dataset.

This was done by integrating existing migrant data from two non-ABS datasets: the Australian Taxation Office Personal Income Tax records and the Department of Social Services Settlement Database. By better utilising these administrative sources, the project effectively had no data collection costs, and added no burden on the community.

The integrated dataset provided, for the first time, information on the personal income of migrants

based on their visa stream (e.g. humanitarian, skilled or family stream). The ABS' partners in this project have recognised the value of this data in supporting government policy making, program management and service delivery. Through this partnership, the ABS will continue to produce the Personal Income Tax and Migrants Integrated Dataset on an annual basis.

> *"Reliable data like this will be of ongoing importance to policymakers, given the prominence of migration in shaping future economic and population growth."*

David Smith, Director of the Economic Analysis Unit, Department of Immigration and Border Protection.

There is more work to be done in undertaking one of the biggest changes in the ABS' history and with the ongoing support of our stakeholders, we are confident we can achieve our vision of **unleashing the power of statistics for a better Australia.**

Realising the potential of new data sources and methods

REALISING THE POTENTIAL OF NEW DATA SOURCES AND METHODS

As a part of our drive to meet demands for increased and improved statistical services, we are moving beyond traditional data collection approaches to take advantage of new and exciting data sources and methods. These new sources and methods will offer users of statistics the following benefits:

- **less burden for survey respondents** - an increased use of alternative data sources will reduce the need to collect data directly from respondents
- **less costly** - reducing the costs of existing approaches will enable the ABS to produce more statistics with existing funding
- **more comprehensive** - using new methods and a wider range of data sources will enable users to more easily pinpoint and analyse emerging trends
- **richer statistics** – which are more timely, relevant, accurate, coherent, interpretable and accessible, for meeting policy and research requirements.

By tapping into the potential of these new approaches, and making it part of the core, mainstream production of statistics, we will be able to leverage the power of multiple data sources and apply more sophisticated modelling methods. These new sources and methods will enable us to meet those needs that are beyond traditional data collection approaches.

Case Study 1

Linked Employer-Employee Database (LEED)

The ABS is already using new sources and methods to better use data that has already been produced as part of government agencies' day to day transactional and administrative activities. For example, the foundational Linked Employer-Employee Database (LEED) project, which predominately used business and personal tax data administered by the Australian Taxation Office, to produce new experimental data to inform the Australian labour market.

The LEED foundation projects demonstrate the ABS' commitment to innovate and deliver new information on the Australian labour market using administrative data. For example, through integrating employer and employee data, we are able to measure for the first time that 1.9 million employees were multiple job holders (individuals with two or more concurrent jobs) in 2011-12. These statistics can only be produced by linking employer and employee data.

The foundation projects represent an important step towards the development of a future LEED. The development will address a longstanding information gap in Australian labour statistics by providing a single database capable of addressing complex questions about employer and employee relationships, at both a point in time and across a number of years.

The future LEED will provide a better range of information on labour market dynamics, firm level productivity and a range of regional analytics. New information will also be available to address other complex policy and research questions with no increased regulatory or survey burden.

The long term vision is to extend the LEED to include data sources other than just tax data. Due to its size and high population coverage, a tax-based database has the potential to be enlarged with other administrative datasets and ABS collections (i.e. person and business level survey data, and Census). This will help broaden the information base on the Australian labour market and help address complex policy problems. It also complements the current labour statistics produced by the ABS.

> *"LEED will enable us to explore, in a very tangible and useful way, a number of key dimensions of the statistical transformation:*
> - *increasing the solution-orientation of the ABS*
> - *realising the benefits of new methods and approaches*
> - *increasing the use of administrative data."*

Michael Smedes, Program Manager, Transforming Economic Statistics, Australian Bureau of Statistics.

Case Study 2

Enhancing Australia's CPI

The ABS has used new methods to enhance one of Australia's best known statistics, the Consumer Price Index (CPI). The CPI measures changes in the price of a fixed basket of goods and services acquired by consumers in metropolitan private households. This is intended to measure the overall inflation in prices of goods and services acquired by Australian households.

Price data collection was traditionally the role of ABS officers in all capital cities, but the availability of transactions data direct from retailers has now established new opportunities both in the collection and future enhancement of the Australian CPI.

One key aspect of this project was the secondment of Professor Jan de Haan, an internationally recognised prices expert from Statistics Netherlands/Delft University. Professor de Haan was engaged to enable a risk managed approach to CPI enhancement.

The ABS also worked with key stakeholders from the Reserve Bank and the Treasury during the project. Given the interest in enhancing the CPI, this approach was a valuable way for the ABS to supplement its existing expertise and engage with risk in a measured way.

With Professor de Haan's assistance, the project developed a research program into future enhancements to the Australian CPI. A number of areas were identified where the ABS could further expand its use of transactions data, as well as providing specific advice on methods and business processes.

Project outcomes have led to more efficient use of price and quantity information from transactions datasets and may also be able to enhance other macroeconomic statistics, such as Retail Trade and the National Accounts.

The success of this project so far has encouraged the ABS to increase the use of transactions data. While all new uses will present unique challenges, the methods and processes developed for the CPI will help streamline any implementation process undertaken for other statistics.

There is more work to be done in undertaking one of the biggest changes in the ABS' history and with the ongoing support of our stakeholders, we are confident we can achieve our vision of **unleashing the power of statistics for a better Australia**.

Consolidating and integrating household surveys

CONSOLIDATING AND INTEGRATING HOUSEHOLD SURVEYS

Household survey data is a fundamentally important input into official statistics. Household surveys enable us to collect information directly from people for the express purpose of producing statistical information.

The cost to the ABS of traditional survey collection methods has been increasing over time and the ABS is seeking ways to deliver statistics which are less intrusive and less costly on households. We are increasing our capability to be more responsive and flexible to meet current and emerging information needs through the consolidation and integration of our household surveys.

The consolidation and integration of our household surveys will ensure we continue to deliver optimum survey programs and trusted official statistics. Key to achieving this is the development of the Australian Population Survey.

The Australian Population Survey is our new approach to producing high quality social statistics. By consolidating and integrating the existing suite of household surveys into one flexible, responsive and cost-effective Australian Population Survey we are able to create more frequent and richer statistics for our data users.

There will be many benefits for users of data from an Australian Population Survey, including:

- **more comprehensive data** - by consolidating individual surveys into a single survey with a larger sample size, we will be able to better use taxpayers' money to provide more comprehensive data
- **integrated data** - users will be able to make more informed decisions from Australian Population Survey data linked to Census and administrative datasets
- **more frequent statistics** - the Australian Population Survey will make tracking emerging trends easier through continuous collection of data
- **greater targeted data collection** - users will be able to access more complete data regarding key population groups of interest, as the Australian Population Surveys' two-phase model allows more efficient targeted selection of households with certain characteristics
- **responsive to user needs** - the ABS will be able to more easily provide data at shorter notice as a result of the modular design of the survey and its continuous ongoing data collection.

The Australian Population Survey is being designed with several key features:

- **a large sample size** - of 150,000 to 200,000 households, per year
- **First Phase** – data will be collected from all respondents, using digital methods wherever possible. The content will be designed to facilitate integration with both the Census and key administrative datasets, as well as to produce key statistics for Australia
- **Second Phase** – will involve sub samples of respondents to the first phase. Around half of the first phase respondents will be followed up for further information via one of the second-phase streams:
    - **Critical Monthly Stream** – will feature topics traditionally part of the Monthly Population Survey, such as the monthly Labour Force Survey
    - **General Stream** – will feature a short set of core social and demographic content and a range of topics traditionally covered in periodic stand-alone surveys
- **Aboriginal and Torres Strait Islander Discrete Communities and Very Remote Areas Stream** – will cover a range of topics, including labour force information, which will then be brought together with data collected from other streams to produce nationally representative data.

The remaining half of first phase respondents are available for inclusion in data collection activities, such as:

- **Rapid Response Stream** – available to meet information needs which arise at short notice, are short term, and are brief in content. The Rapid Response Stream

can effectively target sub-populations of interest identified by data collected in first phase.
- ○ **Longitudinal Stream** - in addition to longitudinal information obtained linking survey data with administrative data, this prospective second phase stream allows the unique opportunity to recruit long-term longitudinal panels for sub-populations of interest, based on the characteristics collected in First Phase.

The Australian Population Survey will be developed and implemented consistent with ABS' risk appetite that is articulated in the ABS Risk Management Framework. While managing any impacts on the quality of our statistics, we support continual improvement. Any changes will be implemented in a carefully considered way. This low risk appetite means we will consult heavily with users before any implementation starts.

More information on the Australian Population Survey will be released in the form of a Discussion Paper in the first half of 2016.

There is more work to be done in undertaking one of the biggest changes in the ABS' history and with the ongoing support of our stakeholders, we are confident we can achieve our vision of **unleashing the power of statistics for a better Australia**.

Consolidating and integrating business surveys

CONSOLIDATING AND INTEGRATING BUSINESS SURVEYS

Collecting business survey data has been, for many years, one of the foundations of producing official statistics. Undertaking business surveys enables the ABS to collect information directly from businesses, which can then be either published in its own right, or used in the compilation of more complex data, such as the National Accounts.

The cost to the ABS of undertaking traditional business survey collection methods has been increasing over time; while there is also a strong desire to reduce the red-tape burden on those businesses selected in ABS surveys. At the same time, the amount of data available through other sources, such as through other business reporting to government, along with other administrative and transactional datasets, provide the opportunity to replace direct survey data collection, while still ensuring the continued quality of our statistics.

The ABS is seeking ways to deliver statistics which are less intrusive and less costly on businesses, while at the same time, increasing our capability to be more responsive and flexible to meet current and emerging information needs. Consolidating and integrating our business survey program is one way we will achieve this.

By consolidating our business survey program, we will:

- meet more information requirements and provide more timely statistics – where the focus is on delivering tailored statistical solutions with greater agility and responsiveness to the needs of our users. More client engagement, and the production of statistical products that combine survey data with government, administrative and transactional data will result in richer data sets for our users
- ensure the continued quality of ABS business statistics - through greater coherence across ABS estimates; supported by streamlined data processing and improved statistical capability within the ABS
- strengthen relationships with our business data providers - by improving digital collection methods to reduce respondent burden; reduce and consolidate the number of business surveys conducted; and reuse data already reported to government
- reduce survey management and processing costs - through the use of modernised survey infrastructure and improved work program coordination.

The consolidation and integration of the business survey program will be developed and implemented consistent with ABS' risk appetite that is articulated in the ABS Risk Management Framework. While managing any impacts on the quality of our statistics, we support continual improvement. Any changes will be implemented in a carefully considered way. This low risk appetite means we will consult heavily with users before any implementation starts.

Over the next 12 months, the ABS will further develop and refine its approach for conducting business surveys, and more information will be released as development progresses.

There is more work to be done in undertaking one of the biggest changes in the ABS' history and with the ongoing support of our stakeholders, we are confident we can achieve our vision of **unleashing the power of statistics for a better Australia.**

Unleashing the power of data through improved access

UNLEASHING THE POWER OF DATA THROUGH IMPROVED ACCESS

The ABS has a central role in improving access to data. By leveraging our skills and experience, we have already made significant progress towards improving the availability and use of data, as advances in both technology and statistical methodology now enable us to provide greater access to data, but in ways that do not disclose sensitive personal information.

Microdata access is a priority under the ABS transformation agenda and is consistent with the objectives of the Department of the Prime Minister and Cabinet for public sector data management to:

> "...optimise the use and reuse of public data; to release non sensitive data as open by default; and to collaborate with the private and research sectors to extend the value of public data for the benefits of the Australian public."

A Microdata Access Review has identified recommendations and a roadmap for changes needed over the next 12-18 months to enable flexible and wide-ranging access to ABS microdata for our external clients.

What are we trying to achieve?

- a microdata service that is responsive to the needs of government, the research community and the public in a reliable and safe manner
- increased user ease of analysis of ABS microdata through flexible access options
- enhanced opportunities for partnerships with government and researchers
- microdata dissemination systems compatible with new ABS foundational infrastructure
- reduced effort required for analysis and dissemination, through streamlining internal and external analysis systems.

To modernise our approach, we are adopting the Trusted Access Model, adapted from international best practice. It is built on the recognition that mutual benefits flow from researcher access to public data and the value of partnerships that reflect trust and shared accountability. The model is being implemented in the ABS using the Five Safes Principles for the assessment of disclosure risk.

Figure 1. Five Safes Principles

We are also applying the Five Safes Principles to ensure access to data can be granted in an appropriately safe environment. This has been reflected in the following activities:

- growing number of in-postings, providing government staff with access to microdata in ABS offices
- release of three detailed microdata files designed specifically for use within the ABS Data Laboratory (ABSDL), allowing users to perform complex modelling and analysis

- pilot of a Virtual Microdata Laboratory (VML) at the Department of Social Services and Productivity Commission, providing authorised staff with secure access to microdata within their office
- release of test files to assist users prepare code prior to ABSDL sessions
- development of a training package for users of ABS microdata focused on shared accountability.

Case Study 1

Microdata files released in the ABS Data Laboratory (ABSDL)

To date, three detailed microdata files have been prepared and released specifically for use within the ABSDL with access points in each capital city ABS office:

- *Australian Census Longitudinal Dataset*
- *Outcomes from Vocational Education and Training in Schools, Australia*
- *Employee Earnings and Jobs, Australia* (a Linked Employer-Employee Database foundation project).

This microdata was de-identified and confidentialised within the context of the other controls of the ABSDL, which offers security around who uses the data as well as how it is used. Sophisticated analysis can be conducted on these unit record files using a variety of contemporary statistical packages. Feedback from users has been very positive.

Case Study 2

Testing of the Virtual Microdata Laboratory (VML)

A pilot Virtual Microdata Laboratory (VML) system has been successfully tested at the Department of Social Services and the Productivity Commission. In effect, this means that the ABSDL is now available onsite to staff in these agencies. Further enhancements to the pilot VML system are planned for release in early 2016 to enable access to detailed microdata files by authorised staff in other government agencies and possibly research institutes.

There is more work to be done in undertaking one of the biggest changes in the ABS' history and with the ongoing support of our stakeholders, we are confident we can achieve our vision of **unleashing the power of statistics for a better Australia**.

About this Release

The ABS is transforming its statistics program to produce trusted, high quality statistics that are: richer; draw on multiple sources; more coherent; more accessible; and use new methods to inform on matters of importance for Australia. The statistical transformation program will enable the ABS to exploit new opportunities and better meet the needs of users, with enhanced capability to extract greater value from all available data.

The Information Paper: Transforming Statistics for the Future is the first of a series of papers that will be progressively released throughout the five year transformation journey, highlighting areas of focus for the transformation; articulating the benefits for users of statistics; and outlining opportunities for input through consultation.